

1 new claims 15-18. Please add new claims 15-18. Please amend
2 claims 9-14.

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4 5. (Twice Amended but now Canceled) A selectable waveguide
5 having a first position and a second position for respectively
6 communicating first or second signals from an antenna feed to
7 respective first and second probes, the selectable waveguide
8 comprising,

9 an antenna feed port coupled to the antenna feed for
10 communicating the signals between the antenna feed and the
11 first and second probes,

12 a first waveguide section having a first shape and a first
13 cross-section for coupling to the antenna feed port for
14 communicating the first signal, the first shape is straight,

15 a first port for coupling the first probe to the first
16 waveguide section for communicating the first signal between
17 the first probe and the first waveguide section,

18 a second waveguide section having a second shape and a
19 second cross-section for coupling to the antenna feed port for
20 communicating the second signal, the second shape is bent at
21 ninety degrees with a forty-five degree reflective surface,

22 a second port for coupling the second probe to the second
23 waveguide section for communicating the second signal between
24 the second probe and the second waveguide section, [the first
25 and the second shapes are selected from the group consisting of
26 straight and bent at ninety degrees with a forty-five degree
27 reflective surface,] the first and second cross sections are
28 selected from the_group consisting of square and circular, the

1 first and second shapes and the first and second cross sections
2 enable concurrent isolated communications of the first and
3 second signals through either one of the first and second
4 waveguide sections when the first and second signals are
5 orthogonally polarized respecting each other, and

6 an element for supporting the first and second waveguide
7 sections, the element having a first position for communicating
8 the first signal between the antenna feed port through the
9 first waveguide section to the first port, the element having a
10 second position for communicating the second signal between the
11 antenna feed port through the second waveguide section to the
12 second port.

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14 6. (Twice Amended but now Canceled) The selectable
15 waveguide of claim 5 wherein,

16 the element is a rotating element,
17 the first signal is a first polarized signal,
18 the first waveguide shape is straight,
19 the second signal is a second polarized signal,
20 the second waveguide shape is bent at ninety degrees
21 having a forty-five degree reflective surface, and

22 the selectable waveguide is for selecting the
23 communication[g] of either the first or second polarized
24 signals, wherein the first and second polarized signals being
25 orthogonal [respecting] with respect to each other.

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1 7. (Amended and Rewritten) The selectable waveguide of claim
2 5 wherein,

3 the element is a rotating element,
4 the first signal is a circularly polarized signal,
5 the first waveguide shape is straight,
6 the second signal is a linearly polarized signal,
7 the second waveguide shape is bent at ninety degrees
8 having a forty-five degree reflective surface, and

9 the selectable waveguide is for selectively communicating
10 either the circularly polarized signal or the linearly
11 polarized signal.
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13 8. (Twice Amended but now Canceled) A selectable waveguide
14 having a first position and a second position for respectively
15 communicating first or second signals from an antenna feed to
16 respective first and second probes, the selectable waveguide
17 comprising,

18 an antenna feed port coupled to the antenna feed for
19 communicating the signals between the antenna feed and the
20 first and second probes,

21 a first waveguide section having a first shape and a first
22 cross-section for coupling to the antenna feed port for
23 communicating the first signal, the first shape is straight,

24 a first port for coupling the first probe to the first
25 waveguide section for communicating the first signal between
26 the first probe and the first waveguide section,

27 a second waveguide section having a second shape and a
28 second cross-section for coupling to the antenna feed port for

1 communicating the second signal, the second shape is bent at
2 ninety degrees with a forty-five degree reflective surface,
3 a second port for coupling the second probe to the second
4 waveguide section for communicating the second signal between
5 the second probe and the second waveguide section, the first
6 and second cross sections are selected from the group
7 consisting of square and circular, the first and second shapes
8 and the first and second cross sections enable concurrent
9 isolated communications of the first and second signals through
10 either one of the first and second waveguide sections when the
11 first and second signals are orthogonally polarized respecting
12 each other, and

13 an element for supporting the first and second waveguide
14 sections, the element having a first position for communicating
15 the first signal between the antenna feed port through the
16 first waveguide section to the first port, the element having a
17 second position for communicating the second signal between the
18 antenna feed port through the second waveguide section to the
19 second port,

20 [The selectable waveguide of claim 5] wherein:

21 the second signal comprises a high frequency signal and a
22 low frequency signal[,];

23 the reflective surface is a frequency selective reflective
24 surface for reflecting the low frequency signal to the second
25 port and for passing the high frequency signal to the first
26 port[,]; and

27 the second waveguide section comprises a waveguide
28 extension extending from the frequency selective reflective

1 surface and the first port for communicating the high frequency
2 signal to the first probe through the first port when the
3 selectable waveguide is in the second position.

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5 9. (Twice Amended) A selectable waveguide arrangement for
6 respectively communicating first[,] or second or third signals
7 from an antenna feed to respective first[,] and second and
8 third probes, the selectable waveguide arrangement comprising a
9 front end selectable waveguide and a back end selectable
10 waveguide, wherein,

11 the front end selectable waveguide comprises:

12 an antenna feed port coupled to the antenna feed for
13 communicating the first and second and third signals between
14 the antenna feed and the first and second and third probes,
15 respectively;

16 a first front end waveguide section having a first front
17 end shape for coupling to the antenna feed port for
18 communicating the second and third signals;

19 a first front end port for coupling to the back end
20 selectable waveguide for communicating the second and third
21 signals between the antenna feed port and the back end
22 selectable waveguide;

23 a second front end waveguide section having a second front
24 end shape for coupling to the antenna feed port for
25 communicating the first signal;

26 a second front end port for coupling the first probe to
27 the second front end waveguide section for communicating the
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1 first signal between the antenna feed port and the first probe
2 through the second front end waveguide section; and

3 a front end element for supporting the first front end
4 waveguide section and the second front end waveguide section,
5 the front end element has a first front end position for
6 communicating the second and third signals between the antenna
7 feed port through the first front end waveguide section through
8 the first front end port to the back end selectable waveguide,
9 the front end element has a second front end position for
10 communicating the first signal between the antenna feed port
11 through the second front end waveguide section through the
12 second front end port to the first probe, and wherein,

13 the back end selectable waveguide comprises:

14 a back end input port coupled to the first front end port
15 for communicating the second and third signals between the
16 first front end port respectively to the second and third
17 probes;

18 a first back end waveguide section having a first back end
19 shape for coupling to the back end input port for communicating
20 the second and third signals;

21 a first back end port for coupling to the first back end
22 waveguide section for communicating the third signal between
23 the back end input port and the third probe through the first
24 back end waveguide section;

25 a second back end waveguide section having a second back
26 end shape for coupling to the back end input port for
27 communicating the second signal;

1 a second back end port for coupling the second back end
2 waveguide section to the second probe for communicating the
3 second signal between the back end input port and the second
4 probe through the second back end waveguide section; and

5 a back end element for supporting the first back end
6 waveguide section and the second back end waveguide section,
7 the back end element has a first back end position for
8 communicating the third signal between the back end input port
9 through the first back end waveguide section through the first
10 back end port to the third probe, the back end element has a
11 second back end position for communicating the second signal
12 between the back end input port through the second back end
13 waveguide section through the second back end port to the
14 second probe, one of the first and second front end shapes is
15 straight and the other is bent at ninety degrees, one of the
16 third and fourth back end shapes is straight and the other is
17 bent at ninety degrees, the first and second and third and
18 fourth waveguide sections have cross sections selected from the
19 group of square and circular.

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1 14. (Twice Amended) The selectable waveguide arrangement of
2 claim 9, wherein the third signal comprises a fourth signal and
3 a fifth signal, the selectable waveguide arrangement is coupled
4 to a fourth probe and a fifth probe, the selectable waveguide
5 arrangement further comprises,

6 a coupler coupled to the first front end port and
7 comprising a fourth port and fifth port respectively coupled to
8 the fourth and fifth probes, the fourth and fifth signals are
9 orthogonally polarized [respecting] with respect to each other
10 and the fourth and fifth probes are polarization sensitive to
11 respectively communicate the fourth and fifth signals between
12 the antenna feed port and the fourth and fifth probes through
13 the first front end waveguide section and fourth and fifth
14 ports.

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1 15. (New) A selectable waveguide having a first position and a
2 second position for respectively communicating first or second
3 signals from an antenna feed to respective first and second
4 probes, the selectable waveguide comprising,

5 an antenna feed port coupled to the antenna feed for
6 communicating the ^{respective} signals between the antenna feed and the
7 first and second probes,

8 a first waveguide section having a first shape and a first
9 cross-section for coupling to the antenna feed port for
10 communicating the first signal, the first shape is straight,

11 a first port for coupling the first probe to the first
12 waveguide section for communicating the first signal between
13 the first probe and the first waveguide section,

14 a second waveguide section having a second shape and a
15 second cross-section for coupling to the antenna feed port for
16 communicating the second signal, the second shape is bent at
17 ninety degrees with a forty-five degree reflective surface,

18 a second port for coupling the second probe to the second
19 waveguide section for communicating the second signal between
20 the second probe and the second waveguide section, the first
21 and second cross sections are selected from the group
22 consisting of square and circular, the first and second shapes
23 and the first and second cross sections enable concurrent
24 isolated communications of the first and second signals through
25 either one of the first and second waveguide sections when the
26 first and second signals are orthogonally polarized respecting
27 each other, and *with respect to*

an element for supporting the first and second waveguide sections, the element having a first position for communicating the first signal between the antenna feed port through the first waveguide section to the first port, the element having a second position for communicating the second signal between the antenna feed port through the second waveguide section to the second port.

16. (New) The selectable waveguide of claim 15 wherein,

the element is a rotating element,

~~the first signal is a first polarized signal,~~

the first waveguide shape is straight,

the second signal is a second polarized signal,

the second waveguide shape is bent at ninety degrees

having a forty-five degree reflective surface, and

the selectable waveguide is for selecting the

communication of either the first or second polarized signals,

wherein the first and second polarized signals being orthogonal with respect to each other.

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1 17. (New) The selectable waveguide of claim 15 wherein,
2 the element is a rotating element,
3 the first signal is a circularly polarized signal,
4 the first waveguide shape is straight,
5 the second signal is a linearly polarized signal,
6 the second waveguide shape is bent at ninety degrees
7 having a forty-five degree reflective surface, and
8 the selectable waveguide is for selectively communicating
9 either the circularly polarized signal or the linearly
10 polarized signal.
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1 18. (New) A selectable waveguide having a first position and a
2 second position for respectively communicating first or second
3 signals from an antenna feed to respective first and second
4 probes, the selectable waveguide comprising,

5 an antenna feed port coupled to the antenna feed for
6 communicating the ^{respective} signals between the antenna feed and the
7 first and second probes,

8 a first waveguide section having a first shape and a first
9 cross-section for coupling to the antenna feed port for
10 communicating the first signal, the first shape is straight,

11 a first port for coupling the first probe to the first
12 waveguide section for communicating the first signal between
13 the first probe and the first waveguide section,

14 a second waveguide section having a second shape and a
15 second cross-section for coupling to the antenna feed port for
16 communicating the second signal, the second shape is bent at
17 ninety degrees with a forty-five degree reflective surface,

18 a second port for coupling the second probe to the second
19 waveguide section for communicating the second signal between
20 the second probe and the second waveguide section, the first
21 and second cross sections are selected from the group
22 consisting of square and circular, the first and second shapes
23 and the first and second cross sections enable concurrent
24 isolated communications of the first and second signals through
25 either one of the first and second waveguide sections when the
26 first and second signals are orthogonally polarized ^{with respect to} respecting
27 each other, and
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1 an element for supporting the first and second waveguide
2 sections, the element having a first position for communicating
3 the first signal between the antenna feed port through the
4 first waveguide section to the first port, the element having a
5 second position for communicating the second signal between the
6 antenna feed port through the second waveguide section to the
7 second port,

8 wherein:,

9 the second signal comprises a high frequency signal and a
10 low frequency signal;

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11 the reflective surface is a frequency selective reflective
12 surface for reflecting the low frequency signal to the second
13 port and for passing the high frequency signal to the first
14 port; and

15 the second waveguide section comprises a waveguide
16 extension extending from the frequency selective reflective
17 surface and the first port for communicating the high frequency
18 signal to the first probe through the first port when the
19 selectable waveguide is in the second position.

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1 9. (Twice Amended and Rewritten) A selectable waveguide
2 arrangement for respectively communicating first or second or
3 third signals from an antenna feed to respective first and
4 second and third probes, the selectable waveguide arrangement
5 comprising a front end selectable waveguide and a back end
6 selectable waveguide, wherein,

7 the front end selectable waveguide comprises:

8 an antenna feed port coupled to the antenna feed for
9 communicating the first and second and third signals between
10 the antenna feed and the first and second and third probes,
11 respectively;

12 a first front end waveguide section having a first front
13 end shape for coupling to the antenna feed port for
14 communicating the second and third signals;

15 a first front end port for coupling to the back end
16 selectable waveguide for communicating the second and third
17 signals between the antenna feed port and the back end
18 selectable waveguide;

19 a second front end waveguide section having a second front
20 end shape for coupling to the antenna feed port for
21 communicating the first signal;

22 a second front end port for coupling the first probe to
23 the second front end waveguide section for communicating the
24 first signal between the antenna feed port and the first probe
25 through the second front end waveguide section; and

26 a front end element for supporting the first front end
27 waveguide section and the second front end waveguide section,
28 the front end element has a first front end position for

1 communicating the second and third signals between the antenna
2 feed port through the first front end waveguide section through
3 the first front end port to the back end selectable waveguide,
4 the front end element has a second front end position for
5 communicating the first signal between the antenna feed port
6 through the second front end waveguide section through the
7 second front end port to the first probe, and wherein,
8 the back end selectable waveguide comprises:
9 a back end input port coupled to the first front end port
10 for communicating the second and third signals between the
11 first front end port respectively to the second and third
12 probes;
13 a first back end waveguide section having a first back end
14 shape for coupling to the back end input port for communicating
15 the second and third signals;
16 a first back end port for coupling to the first back end
17 waveguide section for communicating the third signal between
18 the back end input port and the third probe through the first
19 back end waveguide section;
20 a second back end waveguide section having a second back
21 end shape for coupling to the back end input port for
22 communicating the second signal;
23 a second back end port for coupling the second back end
24 waveguide section to the second probe for communicating the
25 second signal between the back end input port and the second
26 probe through the second back end waveguide section; and
27 a back end element for supporting the first back end
28 waveguide section and the second back end waveguide section,

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1 the back end element has a first back end position for
2 communicating the third signal between the back end input port
3 through the first back end waveguide section through the first
4 back end port to the third probe, the back end element has a
5 second back end position for communicating the second signal
6 between the back end input port through the second back end
7 waveguide section through the second back end port to the
8 second probe, one of the first and second front end shapes is
9 straight and the other is bent at ninety degrees, one of the
10 third and fourth back end shapes is straight and the other is
11 bent at ninety degrees, the first and second and third and
12 fourth waveguide sections have cross sections selected from the
13 group of square and circular.

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1 10. (Amended and Rewritten) The selectable waveguide
2 arrangement of claim 9 wherein,

3 the first front end waveguide section shape is straight
4 and uniform in cross section and extends from the antenna feed
5 port to the first front end port,

6 the first back end waveguide section shape is straight and
7 uniform in cross section and extends from the back end input
8 port to the first back end port,

9 the second front end waveguide section shape is bent at
10 ninety degrees having a forty-five degree reflective surface
11 and uniform in cross section and extends from the antenna feed
12 port to the second front end port, and

13 the second back end waveguide section shape is bent at
14 ninety degrees having a forty-five degree reflective surface
15 and uniform in cross section and extends from the back end
16 input port to the second back end port.

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19 11. (Amended and Rewritten) The selectable waveguide
20 arrangement and claim 9 wherein,

21 the first and second front end waveguide sections have a
22 ^{larger} smaller cross section than the first and second back end
23 waveguide sections, respectively.

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25 12. (Amended and Rewritten) The selectable waveguide
26 arrangement of claim 9, wherein the second and third signals
27 are respective polarized signals and are orthogonally polarized
28 ^{with respect to} respecting each other.

1 13. The selectable waveguide arrangement of claim 9, wherein
2 the first front end port is a tapered port for attenuating low
3 frequency components of the second and third signals.
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8 14. (Twice Amended and Rewritten) The selectable waveguide
9 arrangement of claim 9, wherein the third signal comprises a
10 fourth signal and a fifth signal, the selectable waveguide
11 arrangement is coupled to a fourth probe and a fifth probe, the
12 selectable waveguide arrangement further comprises,

13 a coupler coupled to the first front end port and
14 comprising a fourth port and fifth port respectively coupled to
15 the fourth and fifth probes, the fourth and fifth signals are
16 orthogonally polarized with respect to each other and the
17 fourth and fifth probes are polarization sensitive to
18 respectively communicate the fourth and fifth signals between
19 the antenna feed port and the fourth and fifth probes through
20 the first front end waveguide section and fourth and fifth
21 ports.
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